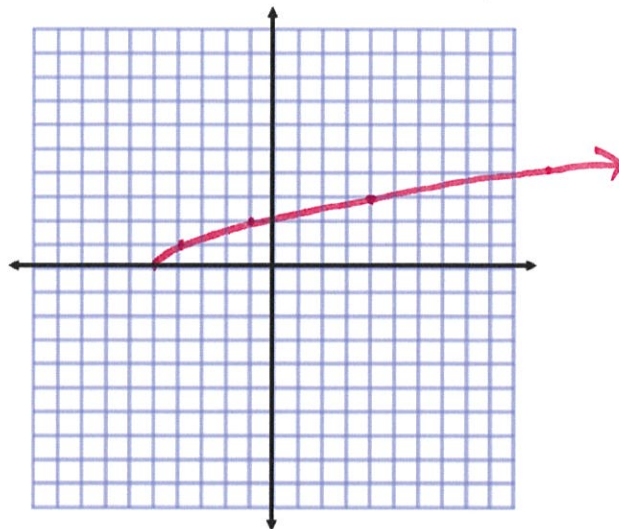


Name: *Solutions / Answers*

Directions: Graph each function neatly and carefully.

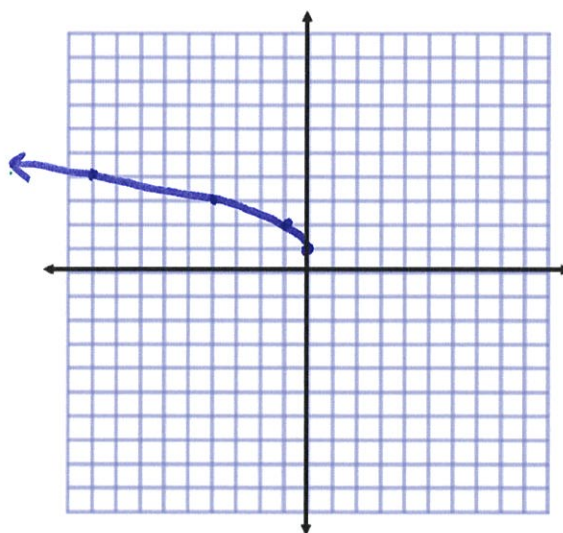
1.  $f(x) = \sqrt{x+5}$  or  $f(x) = (x+5)^{\frac{1}{2}}$

*shift left 5 units*



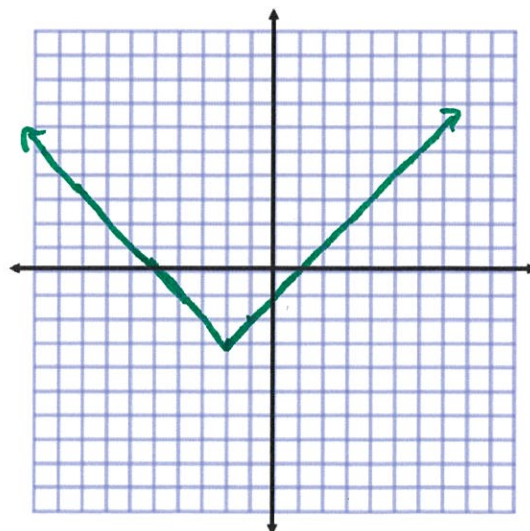
2.  $f(x) = \sqrt{-x} + 1$  or  $f(x) = (-x)^{\frac{1}{2}} + 1$

*reflection in y-axis  
vert. shift up 1 unit*



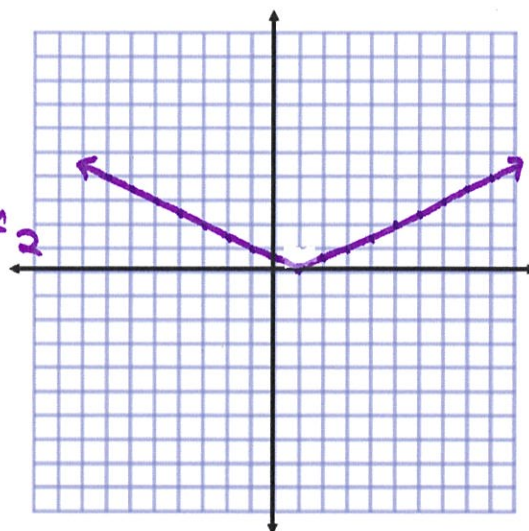
3.  $f(x) = |x+2| - 3$

*hor. shift left 2  
vert. shift down 3*



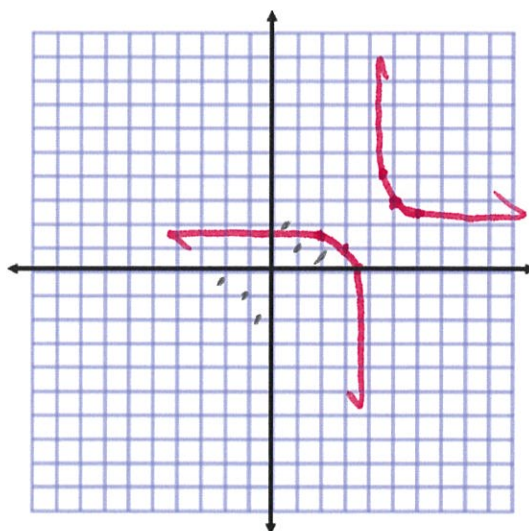
4.  $f(x) = \frac{1}{2}|x-1|$

hor. shift right 1  
 (Vert. compression by a factor of 2  
 take  $\frac{1}{2}$  of y-values



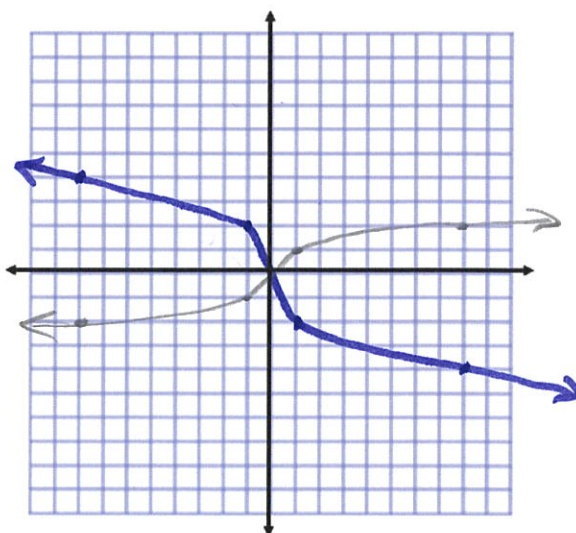
5.  $f(x) = \frac{1}{x-4} + 2$

shift hor. right 4  
 shift vert. up 2



6.  $f(x) = 2\sqrt[3]{-x}$  or  $f(x) = 2(-x)^{\frac{1}{3}}$

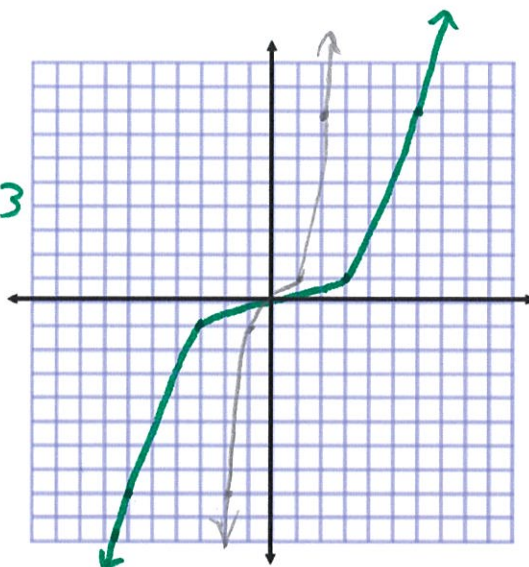
reflection in y-axis  
 (Vert. stretch by a factor of 2  
 multiply y-values by 2





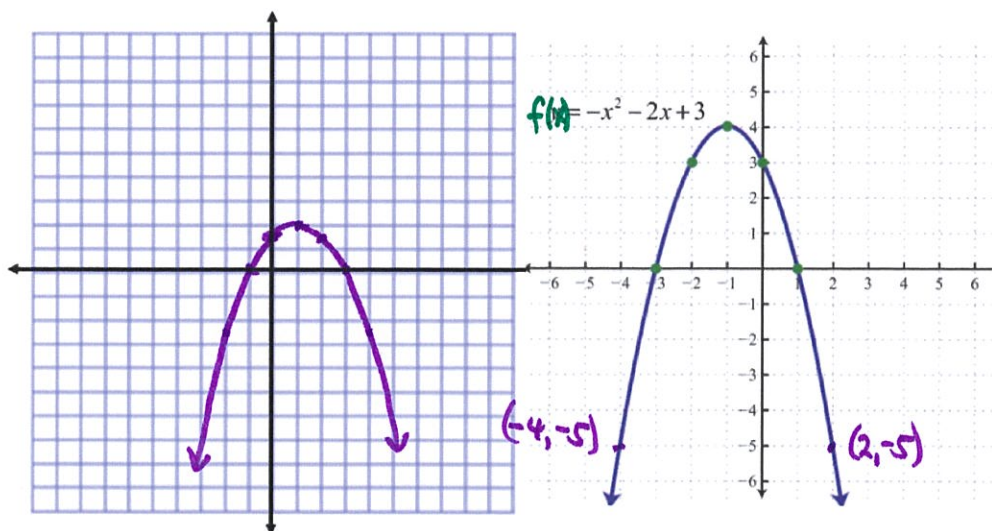
7.  $f(x) = \left(\frac{1}{3}x\right)^3$

hor. stretch by a factor of 3  
Multiply x-values by 3



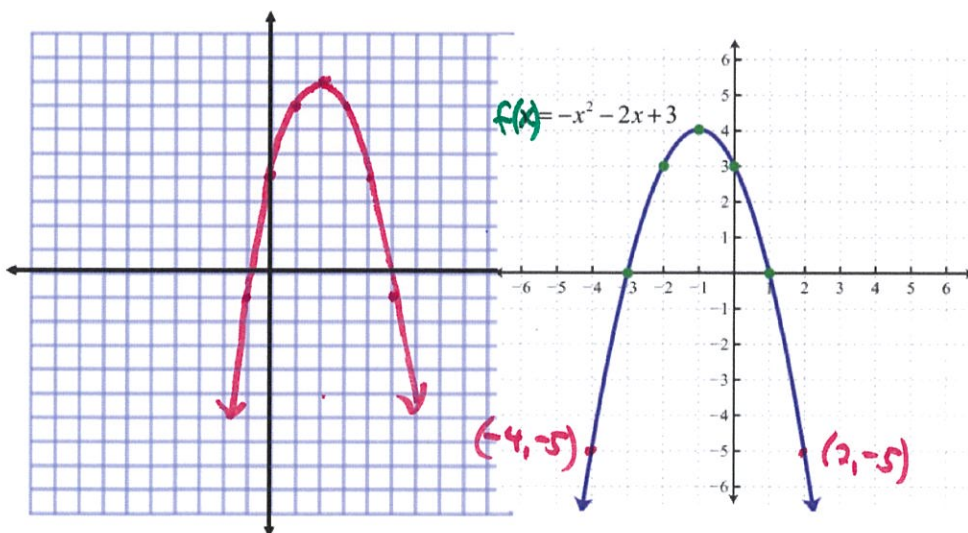
8.  $T(x) = \frac{1}{2}f(-x)$

reflection in y-axis  
vert. compression by a factor of 2  
Take  $\frac{1}{2}$  of y-values



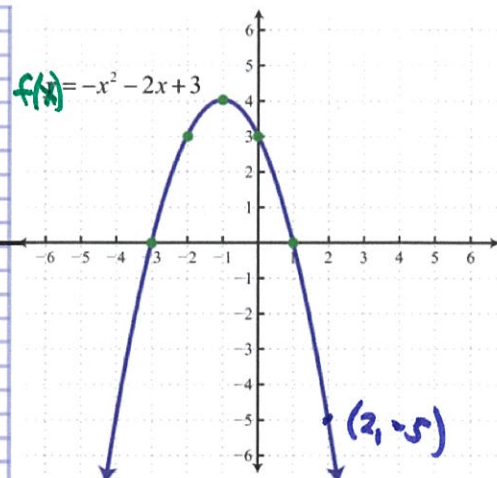
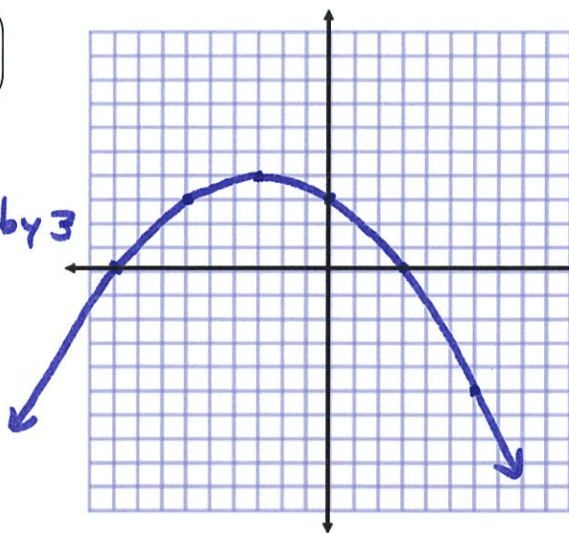
9.  $T(x) = f(x-3) + 4$

hor. shift right 3  
vert. shift up 4



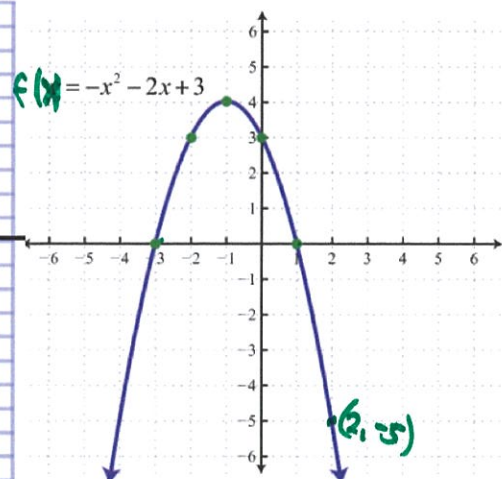
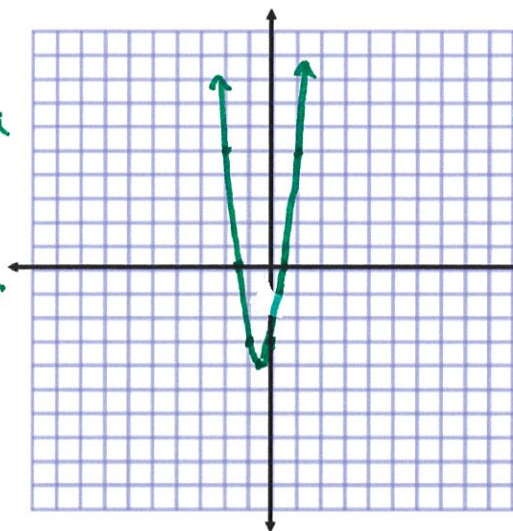
$$10. T(x) = f\left(\frac{1}{3}x\right)$$

Hor. stretch by a factor of 3  
Multiply x-values by 3



$$11. T(x) = -f(2x)$$

Hor. compression by a factor of 2  
Take  $\frac{1}{2}$  of x-values  
Reflection in x-axis



$$12. T(x) = 2|f(x-3)| + 1$$

